

लोक सेवा आयोग
नेपाल नागरिक उड्डयन प्राधिकरण, प्राविधिक, ई. एण्ड टे. कम. इन्जिनियरिङ, पाँचौं, वरिष्ठ सहायक
पदको खुला प्रतियोगितात्मक लिखित परीक्षा
२०८२।०३।१८

पत्र : द्वितीय
समय : २ घण्टा ३० मिनेट

पूर्णाङ्क : १००

विषय : सेवा सम्बन्धी

प्रत्येक Section को उत्तर छुट्टाछुट्टै उत्तरपुस्तिकामा लेख्नुपर्नेछ । अन्यथा उत्तरपुस्तिका रद्द हुनेछ ।

Section "A"

50 Marks

1. What are the five main characteristics of an operational amplifier? Write. 9 5
2. Explain how a digital device, such as a multiplexer can be used to transmit the sensor data. What control logic is required for its operation and how can the system be scaled if more sensors are added? Describe. 2.5 2+2+1=5
3. What does higher SWR (Standing Wave Ratio) mean? What is VOR Band (VHF Omni-Directional Range) used for aviation? Mention. 3 2+3=5
4. Why satellite communication is important in the context of Nepal? Explain satellite communication system with the help of a block diagram. 2.5 2+3=5
5. What is an earthing testing tool? What is the significance of lower earthing value in electrical system? Describe. 2 3+2=5
6. Why is sulfuric acid used as an electrolyte in lead-acid batteries instead of strong acids like nitric acid or hydrochloric acid? Describe its role in electrochemical reactions and battery longevity. 3+2=5
7. How does a Zener diode function? Describe a primary application of a Zener diode. Distinguish between CE, CC and CB configurations of transistors, providing the essential circuit diagrams and characteristics curves. 5 2+2+6=10
8. What are the purposes of Analog-to-Digital (ADC) and Digital-to-Analog (DAC) conversions in signal processing? Explain the difference between sampling rate and resolution in ADC, highlighting their impact on signal quality. Explain with a neat diagram the process of analog to digital conversion in communication system. 3+3+4=10

6

13

Section "B"

50 Marks

9. Explain different types of soldering guns and their area of use. 5
10. What is splicing? Explain the most common splicing techniques used in optical fibers. 2 1+4=5
11. Describe the process of video digitization using a video camcorder. How do video formats (like MPEG or AVI) influence storage size and playback quality on digital platforms? Clarify. 1 2+3=5
12. Explain the types of power supplies utilized in aviation along with their potential applications. 2 5

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13. How spectrum analyzer is important? Briefly explain the working of spectrum analyzer. 1 1+4=5
14. Explain how a firewall differs from a router in protecting a network. Can a router alone provide sufficient security? Justify your answer with examples. 2-5 2+3=5
15. What are the advantages of optical fibers over other media? Draw a block diagram of optical communication system and explain each component. 5 4+6=10
16. Draw a complete solar power system to power an off-grid radio station. How can you maintain the power backup in such stations? Describe. 5 6+4=10

- The End -

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24
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42